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Accessing ICT Enabled Content in Low-Income Countries:
Think Big, Start Small, and Scale Up

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ABSTRACT

While the digital revolution has transformed the way many of us work and live, more than half the world's population lives in rural areas that have been shut-out of the digital transformation. Low-income countries have yet to realize the benefits from the digital revolution; therefore, a need exists for innovative and alternative models to overcome the lack of access to knowledge and learning. This paper examines the challenges faced by low-income countries in accessing ICT enabled content and proposes a Big-Small model where low-income countries can harness the ICT revolution. This paper concludes with a discussion on sustainability and future research directions.

Keywords: *Developing Countries, Developing Economies, ICT, Information and Communication Technology, Least Developed Countries, Low Income Countries, Model*

INTRODUCTION

Access to content is the right to knowledge access (Rossini, 2007). Prior research indicates that ICT investment increases growth dividend (Roller & Waverman, 2001), facilitates economic growth (Waverman, Meschi, & Fuss, 2005), combats poverty (Calderon & Serven, 2004), and promotes expansion in economic activities (World Bank, 1991). ICT is also touted as a means for low-income countries to leapfrog out of their economic predicament (Murthy, 2001). Much of the literature available about ICTs in a development context focuses on the digital divide. The emergence of the 'digital divide' (Brown, 2000) reflected the social and economic imbalance between high and low income countries.

In considering the digital divide, issues of access and connectivity are often the first level of focus. However, there are at least four dimensions of the digital divide – an *information divide* due to some people's inability to gain access to online information due to demographic characteristics; a *skills divide* related to computer specific capabilities; an *economic opportunity divide* related to the inability to receive training, education or employment opportunities; and a *demographic divide* related to certain people's inability to participate in electronic offerings (Molla & Al-jaghoub, 2007; Mossberger et al., 2003). This study focuses on skills and economic opportunity divide. Innovation in low-income countries can be hampered by the multi-prong

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challenges of the digital divide including access to the Internet, ICTs, and content (Rossini, 2007). These challenges are also highlighted by the World Bank Findings as the three pillars of the ICT revolution: connectivity, capacity, and content (Parakash, 2003).

The literature, when discussing low-income (developing) countries, includes countries like Brazil, China, India, and Mexico. Many of these countries have affordable Internet connectivity similar to high-income countries. Telephone rates are inversely correlated to content access, i.e., digital content is less accessible when telecommunication costs are high.

Over the last decade access to the Internet has markedly improved in low-income countries. For instance, in 2006 low-income countries accounted for nearly half of the Internet use; up from 36% in 2003 (UNCATD, 2006; UNCTAD, 2004). And as far back as 1997 most African countries, 48 of the 53 African countries, had Internet connectivity; the five exceptions were Congo, Equatorial Guinea, Gabon, Libya, Somalia, and Western Sahara. The primary reasons for these exceptions were either geopolitical isolation, as in the case of Libya and civil war as in the case of Somalia (Landweber, 1997). Therefore, country level Internet connectivity has been achieved around the world and it is not the primary challenge. The primary Internet connectivity challenge is connectivity to low-income or rural communities. Even in the United States, rural residents in 2003 lagged by half in broadband access compared to their urban counterparts; 9% households in US rural communities with broadband access compared to 22% for urban residents. By 2005 the broadband access gap in US rural and urban communities was 24% and 39%, respectively (Associated Press, 2005).

About half, 53%, of the world population in 2000 lived in rural communities from which 87% of them were from Africa and Asia (UN Population Division, 2001). These two regions have each 70% of their population in rural communities (UN Population Division, 2001). China and India, with their large population, account for 70% of the Asian rural population. China with 60% of its population, 800 million people, (Economist, 2007; China-Profile, 2007) and India with 70% of its population, nearly 700 million people, (Wikipedia, 2007; Press, 1999) account for the large proportion of the Asian rural community. When China and India are excluded the Asian rural population is much smaller. In contrast, over forty Sub-Saharan African countries have an average of 89% of their population in rural communities (World Bank, 2007b; Mbeki, 2005). Hence, content access models for low-income countries must consider the challenges in Sub-Saharan African countries.

This study is motivated by the research question: what ICT enabled models can be used to harness digital content access in low-income countries? The study evaluates the content access challenges in low-income countries and proposes a model for digital content access that can be implemented despite the challenges.

In the remainder of this paper, first, we set the context by discussing the availability of open education resources followed by content access challenges in low-income countries. We then propose the Big—Small ICT model for accessing content in low-income countries. We conclude with a discussion of sustainability and revenue model.

OPEN EDUCATION RESOURCES

Today, there is significant amount of educational content that is freely available digitally. Many groups including MERLOT, Connexions, FLOSS4EDU and TESSA, MIT, UC Berkley, and Stanford University have opened their educational mega power to the public. MERLOT is reaching out to Africa through the MERLOT African Network initiative which provides FREE access to MERLOT content for African higher education institutions. The Connexions project is another example that started at Rice University and became a global source for open educational content. Success areas for the Connexions initiative were reported as

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